

Before proceeding, Applicants wish to express their gratitude to the Examiner for taking the time to discuss the final Office Action, to give consideration to comments made, and to provide thoughtful suggestions as to possible responses during the course of a telephone discussion with the undersigned.

The invention claimed by Applicants is an apparatus for electrochemical splitting of water comprising a photoelectrode comprising a light sensitive catalytic material layer, a polymer electrolyte membrane layer, a metallic substrate layer disposed there between adjacent the polymer electrolyte membrane layer, and at least one photovoltaic device connected in series to the light sensitive catalytic material layer and disposed between the light sensitive catalytic material layer and the metallic substrate layer, wherein each of the light sensitive catalytic material layer, the polymer electrolyte membrane layer, the metallic substrate layer and the at least one photovoltaic device is water permeable.

Claims 1-28 have been rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. In particular, the Examiner indicates that the claimed subject matter, a water permeable photovoltaic device, is not described in the specification in sufficient detail to enable one skilled in the art to make or use the invention. This is the same rejection set forth by the Examiner in the Office Action mailed 14 November 2006 in response to which Applicants filed an

Amendment on 22 January 2007 setting forth arguments showing that one skilled in the art would be able to construct the apparatus claimed by Applicants on the basis of the description of the invention set forth in the specification of the subject application. Applicants respectfully traverse this rejection.

In response to Applicants' arguments asserting enablement of the claimed invention by the description of the invention in the subject application, the Examiner has acknowledged that Applicants' specification does show a perforated metal substrate which allows water to contact and pass through the solar cell. However, the Examiner argues that Applicants have not addressed how the layers of the solar cell still function as a solar cell with water contacting them and passing through them. The basis for this argument is the apparent fact that the prior art repeatedly teaches away from solar cells having any contact with water by providing special protective layers to isolate the water from the solar cells. Thus, the Examiner argues that water is destructive to the solar cell material and the presence of water within the cell would short out the solar cell, thereby preventing the solar cell from operating as a photovoltaic device. Applicants respectfully disagree.

In response to the Examiner's argument, Applicants note that not all of the prior art cited by the Examiner teach away from solar cells having any *contact with water* as posited by the Examiner. In particular, Fig. 1 of Mauk, U.S. Patent

Application Publication 2004/0003837 A1, cited by the Examiner, clearly shows contact of a solar cell with water. However, even if all of the prior art did, in fact, teach away from solar cells in contact with water, Applicants respectfully urge that the invention claimed by Applicants, which requires contact between a solar cell and water, i.e. the exact opposite of the teachings of the prior art, constitutes the quintessential example of an invention. Applicants further note that the rules relating to patentability as set forth in the MPEP do not require that Applicants be able to explain the theories behind the operation of the invention in order for an invention to be patentable, even if the operation of the invention flies in the face of the teachings of the prior art. Accordingly, as previously stated, the specification of the subject application clearly sets forth all of the requirements for producing the apparatus of the invention claimed by Applicants as well as the best mode of producing the apparatus known to Applicants at the time of filing the application. Accordingly, Applicants respectfully urge that the claimed invention is fully enabled by the description in the specification of the subject application.

Notwithstanding, Applicants are enclosing herewith a Declaration under 37 CFR 1.132 by Qinbai Fan, one of the inventors of the invention claimed in the subject application, which Declaration provides data obtained by the Declarant establishing that the solar cell of the claimed invention does not short out when